



# Explaining relationships between ethnic diversity and informal social capital across European countries and regions: Tests of constrict, conflict and contact theory

Michael Savelkoul\*, Maurice Gesthuizen, Peer Scheepers

Department of Sociology, Radboud University Nijmegen, P.O. Box 9104, 6500 HE Nijmegen, The Netherlands

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## ABSTRACT

In this study we focus on the relationship between ethnic diversity and informal social capital. As this refers to rather strong social ties in the intimate domain, it is a strict test of Putnam's claim that ethnic diversity would decrease social capital. In order to explain these relationships, we derived mediating mechanisms from conflict and contact theory. Using data from the European Social Survey (2002/2003), we applied multilevel analyses considering three levels: individuals, regions and countries. Our results revealed a direct positive effect of ethnic diversity at the country level on informal helping, yet no indirect effect via the mediating variables. At the regional level, we only found an indirect effect of ethnic diversity. Here, ethnic diversity increases the likelihood of intergroup contact that in turn is positively related to both informal social meeting and helping. Perceived ethnic threat turned out to have a negative effect on informal social meeting.

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## 1. Introduction

Migration has increased across Western countries during the past decades and is expected to rise even more in the future (Cornelius and Rosenblum, 2005; Hooghe et al., 2008; Zick et al., 2008). As a result, the impact of migration and increasing ethnic diversity on social cohesion has become extensively discussed throughout public, political and scientific arenas (e.g., Cheong et al., 2007). Interest in this relationship has increased even more by Putnam's (2007) recent study "E Pluribus Unum: Diversity and Community in the Twenty-First Century". His results indicated that ethnic diversity in the USA not only increased distrust in out-groups, moreover, Putnam (2007, p. 149) stated that "[...] people living in ethnically diverse settings appear to 'hunker down'", increasing social isolation. He suggested that inhabitants of diverse communities tend to withdraw from social life, a pattern which encompasses "[...] attitudes and behavior, bridging and bonding social capital, public and private connections" (Putnam, 2007, p. 151).

In this study we aim to describe and explain the relationship between ethnic diversity and informal social capital (cf. Pichler and Wallace, 2007), i.e., informal ties with one's direct social environment. These ties refer to private connections with, for instance, family members and close friends. Hence, we assume informal social capital to reflect rather strong ties in the intimate domain and propose that a focus on informal social capital is a rather strict test of Putnam's proposition: if ethnic diversity even reduces informal social ties in the intimate domain, as proposed by Putnam (2007), however, without presenting any empirical evidence for this claim, this might indeed be considered an indicator for declining levels of social cohesion.

\* Corresponding author. Fax: +31 24 361 2399.

E-mail addresses: [m.savelkoul@maw.ru.nl](mailto:m.savelkoul@maw.ru.nl) (M. Savelkoul), [m.gesthuizen@maw.ru.nl](mailto:m.gesthuizen@maw.ru.nl) (M. Gesthuizen), [p.scheepers@maw.ru.nl](mailto:p.scheepers@maw.ru.nl) (P. Scheepers).

Yet, we would like to go a step further. Previous studies on the relationship between ethnic diversity and informal social capital (e.g., Gesthuizen et al., 2009) are, to our knowledge, not only rather scarce, they also share one major lacuna: they addressed only the direct relationship between ethnic diversity and informal social capital without disentangling the underlying mechanisms, that is, the indirect relationships.<sup>1</sup> Although a direct effect of ethnic diversity on informal social capital was not always found, it might be the case that ethnic diversity has *indirect* effects on people's private connections. Theoretically, it is possible that indirect effects of ethnic diversity on informal social capital cancel each other out. This would be an explanation for the absence of a direct effect, if the indirect effects are not taken into account. In this study, we will therefore explicitly focus on these underlying mechanisms. Putnam (2007) referred to two theories, i.e., conflict and contact theories, which might be useful starting points for explaining this relationship, since both suggest different underlying mechanisms. However, he did not elaborate on nor empirically test the proposed mediating mechanisms.

In this study we will build on and improve previous research in two ways. First, we will disentangle and test the underlying mechanisms in order to describe and explain the relationship between ethnic diversity and informal social capital more profoundly. Second, we will distinguish ethnic diversity on both country as well as regional levels. According to Gesthuizen et al. (2009), cross-national research on the effect of ethnic diversity on different dimensions of social cohesion should distinguish an additional aggregate level between the country and the individual level, preferably the municipality level. Previous studies on the effect of ethnic diversity on several dimensions of social capital at the municipality or even neighbourhood level have only been conducted within countries (e.g., Leigh, 2006; Letki, 2008; Laurence, 2011; Tolsma et al., 2009). Although these levels are important, it is rather difficult, or even impossible to find valid data at these levels for all countries in cross-national research. Since social life (e.g., work, school and leisure activities) will partly take place outside of people's direct neighbourhood or even outside of people's municipality, we assume that the regional level is an interesting and important level to consider, where the distinguished mechanisms may play a role. Previous research on out-group derogation (e.g., Schlueter and Wagner, 2008; Savelkoul et al., 2010) showed already that several effects, which we will also address in our present study and will discuss more elaborately in our theory section, can be found at the regional level. Unlike previous cross-national studies, we will simultaneously address the effect of ethnic diversity at the regional and country level. At the country level one may expect other mechanisms to be at work, for instance differences in countries' previous and current immigration policies, which might be reflected in the composition of ethnic minority groups across countries. Moreover, media coverage on ethnic minorities might differ across countries and therefore result in different perceptions of the present out-groups across countries.

Using data from the European Social Survey (2002/2003), supplemented with data on both contextual levels, we will test the effect of ethnic diversity on informal social capital both at the regional and country level. By taking into account both levels simultaneously, we will be able to test the effect of ethnic diversity on the country and regional level more accurately (see e.g., Tolsma et al., 2009). Moreover, we will control for other country- and regional-level characteristics, previously found to influence informal social capital or the mediating variables (e.g., Schneider, 2008; Gesthuizen et al., 2009). The first research question we set out to answer, is: (1) *To what extent does ethnic diversity within (a) European countries, and (b) regions across European countries (in 2002/2003), affect informal social capital?* Moreover, we will address our second research question, reading: (2) *Which mechanism(s) can explain the relationship between ethnic diversity and informal social capital?*

## 2. Theories and hypotheses

To explain the influence of ethnic diversity on informal social capital, we will set out to incorporate the core propositions of three general theories (i.e., constrict, conflict and contact theory), which actually propose contradictory effects of ethnic diversity on informal social capital. As we will distinguish effects of ethnic diversity at the country level as well as at a regional level, we will take into account that the strength of the effect might differ: the influence of ethnic diversity on informal social capital may be in the same direction though stronger at the regional level, due to proximity (Hagendoorn, 2009; Tolsma et al., 2009). We will not, however, differentiate our hypotheses with regard to the relative strength of both effects. Moreover, we will distinguish two dimensions of informal social capital, i.e., informal meeting and informal helping (cf. Pichler and Wallace, 2007). We will come back to this distinction in more detail in our data and measurement section and will formulate our hypotheses on informal social capital in general.

### 2.1. Constrict theory

The first theory to derive hypotheses on the effect of ethnic diversity on informal social capital is Putnam's (2007) constrict theory. His core statement is that ethnic diversity reduces social cohesion with regard to both ethnic out-groups as well as the in-group. He argued that ethnic diversity triggers "[...] anomie or social isolation", fostering people to withdraw from social life, or as he formulated it "[...] pull in like a turtle" (Putnam, 2007, p. 149). As a result, people's level of informal social capital will decline. His theoretical reasoning behind these effects remains, however, rather implicit. Although previous

<sup>1</sup> Empirical research on the effect of ethnic diversity on dimensions of social cohesion has mainly focused on out-group derogation (e.g., Quillian, 1995; Taylor, 1998; Scheepers et al., 2002). In recent years, attention has also been paid to other dimensions, like formal social capital, i.e., participation in civic organizations (e.g., Costa and Kahn, 2003; Tolsma et al., 2009), or generalized trust (e.g., Alesina and La Ferrara, 2002; Leigh, 2006; Hooghe et al., 2009). Studies on the effect of ethnic diversity on informal social capital remain, however, rather limited.

research could not find support for Putnam's claim at the country level (Gesthuizen et al., 2009), we will partly replicate this study using different data and extend it by additionally taking into account the regional level. Based on Putnam's proposition, we formulate the following hypothesis: (1) *Ethnic diversity within* (1a) *European countries as well as* (1b) *regions within these countries will reduce people's level of informal social capital.*

Putnam's (2007) constrict theory proposes a direct negative effect of ethnic diversity on informal social capital. It remains unclear, however, how ethnic diversity actually influences informal social capital. In order to come to grips with the puzzling theoretical explanation, it appears necessary to pay closer attention to the underlying mechanisms of this relationship. Here, Putnam merely gives a start, referring to two theories: conflict and contact theory.

## 2.2. Conflict theory

The first theoretical tradition is based on realistic group conflict theory (Coser, 1956; Blalock, 1967; Bobo, 1999) and ethnic competition theory (Scheepers et al., 2002; Coenders et al., 2004a) and is often referred to as 'conflict theory' (e.g., Putnam, 2007; Tolsma et al., 2009). Conflict theory proposes that ethnic diversity fosters actual competition between the ethnic majority group and ethnic minority groups over scarce resources (e.g., on the labour market) and cultural values. As a result, ethnic diversity is assumed to increase perceptions of (ethnic) threat among members of the (majority) in-group. Regarding the subsequent effect of ethnic threat perceptions on informal social capital, two competing hypotheses can be formulated. According to conflict theory, these ethnic threat perceptions are supposed to increase levels of out-group derogation, and, moreover also to increase in-group favouritism (Coser, 1956; Coenders et al., 2004a,b).<sup>2</sup> Based on this line of reasoning, we expect that perceptions of ethnic threat will foster people to focus on their intimate domain. In other words, informal social capital with people's (largely self-defined) private connections will be increased as a result of perceptions of ethnic threat.

Although conflict theory sheds more light on a possible underlying mechanism (i.e., the mediating effect of ethnic threat perceptions) between ethnic diversity and informal social capital, the proposed direction of this effect is contradictory to the expectations derived from constrict theory. Hooghe et al. (2009) offer an alternative. According to their reasoning, perceptions of ethnic threat may indeed mediate the effect of ethnic diversity on informal social capital (in line with conflict theory). Contradictory to conflict theory they argued, however, that feelings of threat resulting from ethnic diversity can easily turn into generalized attitudes of discomfort and even discomfort with regard to all intimate connections (Hooghe et al., 2009), which in turn may reduce informal social capital. In short, Hooghe et al. (2009) used a mechanism proposed by conflict theory, to explain the negative effect of ethnic diversity as proposed by constrict theory.

Summarizing, we expect that (2) *Ethnic diversity within* (2a) *European countries as well as* (2b) *regions within these countries will foster people's level of perceived ethnic threat in that country/region.* Based on conflict theory, we subsequently expect that (2c) *Perceptions of ethnic threat will increase people's level of informal social capital.* According to Hooghe et al.'s (2009) proposition, we expect, however, an opposite effect: (2d) *Perceptions of ethnic threat will reduce people's level of informal social capital.*

## 2.3. Contact theory

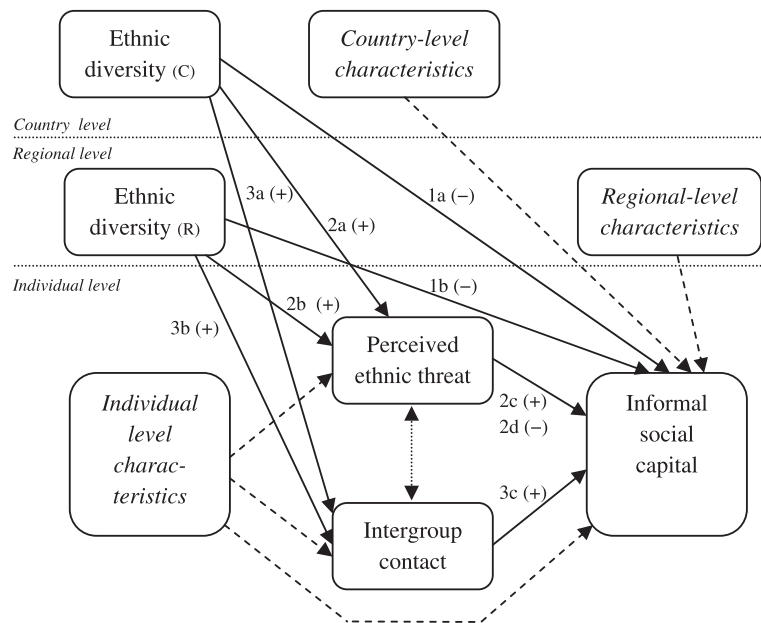
The second theory which Putnam (2007) referred to as a take-off point is (intergroup) contact theory (Allport, 1954; Pettigrew and Tropp, 2006). Contact theory proposes that interethnic contact effectively reduces out-group derogation. Previous research repeatedly showed that ethnic diversity increases the likelihood of intergroup contact, which in turn reduces levels of out-group derogation (e.g., Wagner et al., 2006; Schlueter and Wagner, 2008; Schlueter and Scheepers, 2010). Contact theory might be important in two different ways, as intergroup contact might affect informal social capital both *indirectly* as well as *directly*.

Previous research showed that intergroup contact is not only negatively related to out-group derogation, but moreover, also to perceptions of ethnic threat. Pettigrew and Tropp's (2006) meta-analytical study revealed that contact reduces negative attitudes toward out-groups in several ways, including a reduction of intergroup anxiety: it reduces feelings of threat and uncertainty that people experience in intergroup contexts. Empirical evidence regarding this negative relationship between intergroup contact and perceptions of ethnic threat was recently provided by e.g., Schneider (2008), Pettigrew et al. (2010) and Schlueter and Scheepers (2010). Hence, ethnic threat perceptions might be considered an important mechanism, mediating the effect of ethnic diversity on informal social capital. In order to be able to accurately estimate the effect of intergroup contact, it will therefore be essential to take the effect of ethnic threat perceptions into consideration.<sup>3</sup>

Next to this indirect effect, intergroup contact might also have a *direct* effect on informal social capital. However, to our knowledge, empirical evidence for a direct effect of intergroup contact is conspicuous by absence. Nevertheless, previous

<sup>2</sup> We are aware of the fact that conflict theory mainly distinguishes between the ethnic majority *in-group* and ethnic minority *out-groups*. We assume, however, that one's intimate domain or (mainly self-chosen) private connections, can also be considered as a (self-defined) in-group.

<sup>3</sup> The causal order between intergroup contact and perceived (ethnic) threat is not undisputed. Although previous research mainly considered intergroup contact to be causally antecedent to perceived ethnic threat (e.g., McLaren, 2003; Schneider, 2008; Schlueter and Scheepers, 2010; Pettigrew et al., 2010), the opposite causal order is not inconceivable: people who feel threatened by ethnic out-groups might avoid contact with them (if this is possible, e.g., friendship relations). To our knowledge, this relationship has not yet been tested adequately, using panel data. Therefore, we will not suppose any causal order between intergroup contact and perceived ethnic threat (in line with Savelkoul et al., 2010).



**Fig. 1.** Theoretical framework: Relationship between ethnic diversity and informal social capital. Note: dotted lines represent relationships which are controlled for. Additionally, controlled for effects of country- and regional-level characteristics on perceived ethnic threat and intergroup contact.

research provides some useful indications. Wilson (2000) argued that people who are more extrovert and display a higher level of sociability will get in touch with other people (including ethnic minorities) more easily, resulting in larger networks. This might also increase levels of informal social capital. As extrovert people get to know more people, this will increase their chances to meet informally with other people and provide informal help. Based on this reasoning, one could expect a positive relationship between intergroup contact and informal social capital. We are aware of the fact, however, that this might point to an underlying mechanism rather than a causal relationship. We will come back to this in our discussion.

In sum, we hypothesize that: (3) *Ethnic diversity within (3a) European countries as well as (3b) regions within these countries will increase the likelihood that people living in these countries/regions have intergroup contact.* Moreover, we expect that: (3c) *Intergroup contact is positively related to people's level of informal social capital.*

#### 2.4. Contextual- and individual-level determinants of informal social capital

In order to test the effect of ethnic diversity, both at the country level and regional level, more strictly, we will include country- and regional-level characteristics, previously found to affect informal social capital as well as our mediating variables (e.g., Schneider, 2008; Gesthuizen et al., 2009). Moreover, we will take into account several individual-level determinants in our analysis, which turned out to influence informal social capital and both mediating variables (e.g., Wilson and Musick, 1997; Schlueter and Scheepers, 2010; Savelkoul et al., 2010). We will discuss this in more detail in our data and measurement section. Fig. 1 shows our theoretical framework. The numbers refer to our hypotheses.

### 3. Data and measurement

#### 3.1. Data

For testing our hypotheses, we used data derived from the first wave of the European Social Survey (ESS 2002/2003) (Jowell and The Central Co-ordinating Team, 2003), which are archived and distributed by the Norwegian Social Science Data Services (NSD).<sup>4</sup> These data offer the unique possibility to focus on informal social capital and to simultaneously take both mediating variables (i.e., ethnic threat perceptions and intergroup contact) into consideration, across a large number of European countries. The data were collected by face-to-face interviews with people aged 15 years and over living in private households. Samples were drawn randomly for 21 European countries and Israel.

We only selected European countries for which relevant secondary data regarding ethnic diversity at the regional level were obtainable. We used a country-specific indicator available in the ESS to group respondents into regional units that

<sup>4</sup> Response rates varied by country and exceeded 60 per cent in most countries (for more information see: European Social Survey, 2010).

correspond to the Nomenclature of Statistical Territorial Units classification scheme (NUTS; see Eurostat, 2003). We decided to use the NUTS-2 level, which refers to medium scale regions (ranging from 800,000 to 3 million inhabitants).<sup>5</sup>

We only included respondents who were born in the survey country, who indicated that they had the citizenship of the country and whose parents were both born in the survey country as well. This resulted in a dataset with 23,754 respondents living in 126 regions located in 15 European countries.

### 3.2. Dependent variable: informal social capital

According to Pichler and Wallace (2007), three aspects of informal social capital are important to consider, i.e., the density, strength and extensiveness of social networks. The 'density' dimension of people's informal social capital was measured as follows: 'How often do you meet socially with friends, relatives or work colleagues?'. It was further stated that 'meet socially' implies meeting by choice instead of for reasons of work or pure duty, emphasizing the voluntary or self-selected nature of these social ties. We labelled this dimension 'informal social capital – meet'.

The 'strength' dimension of people's informal social capital was measured using the following item: 'Not counting anything you do for your family, in your work, or within voluntary organisations, how often, if at all, do you actively provide help for other people?'. This dimension was labelled 'informal social capital – help'. For both items a 7-point scale was used: 'every day', 'several times a week', 'once a week', 'several times a month', 'once a month', 'less often' and 'never'. We excluded respondents with missing values (including the answer category 'do not know') on one or both dimensions of informal social capital list-wisely.<sup>6</sup> We constructed both dependent variables in a way that higher values reflect higher levels of informal social capital.

As the dataset does not contain separate items referring to informal social capital with different groups (e.g., family, friends, colleagues, etc.), we were not able to measure the 'extensiveness' dimension of informal social capital.

### 3.3. Mediating variables: perceived ethnic threat and intergroup contact

To test our hypotheses derived from conflict theory and contact theory we included two mediating variables in our analysis. First, we measured *perceived ethnic threat*, using six items referring to economic and non-economic issues related to immigrants. These items were, if necessary, recoded in a way that a higher score reflects a higher level of perceived ethnic threat: 'do immigrants take jobs away in (country) or create new jobs' (0 = create new jobs, 10 = take jobs away), 'do immigrants take out more than they put in with regard to taxes and services' (0 = generally put in more; 10 = generally take out more), 'is immigration bad or good for (country's) economy' (0 = good for economy, 10 = bad for economy), 'is the (country's) cultural life undermined or enriched by immigrants' (0 = cultural life enriched, 10 = cultural life undermined), 'do immigrants make (country) worse or better place to live' (0 = better place to live, 10 = worse place to live), and 'do immigrants make (country's) crime problems worse or better' (0 = crime problems made better; 10 = crime problems made worse). Previous research showed that perceived ethnic threat can be equivalently measured by these items across all countries in the ESS (Coenders et al., 2004c). Respondents with missing values on more than two of the six items were excluded list-wisely. Next, missing values on items were substituted with the value on the highest or second highest correlating item. Finally, we calculated the average score on the six 'perceived ethnic threat' items (Cronbach's alpha = 0.82).

Second, we used the following two items to measure *intergroup contact*, reflecting the private, respectively occupational domain of intergroup contact (cf. Schlueter and Wagner, 2008): 'do you have any friends who have come to live in [country] from another country?' and 'do you have any colleagues who have come to live in [country] from another country?'. The answer categories for both items are: 'no, none at all', 'yes, a few' and 'yes, several'. With regard to the item referring to immigrant colleagues, respondents could also answer that they were not currently working. This answer category was combined with the category referring to no immigrant colleagues. Respondents with missing values on one or both items, were excluded list-wisely. Both items were coded in a way that higher values reflect more intergroup contact and were used to construct a five-point scale of intergroup contact, ranging from 'no intergroup contact' to 'a lot of intergroup contact'.<sup>7</sup>

<sup>5</sup> The NUTS-2 level was the smallest regional level which was available or could be obtained for a large number of countries in the ESS. For some countries only information on the NUTS-3 level was available, which had to be aggregated to the NUTS-2 level. The countries in our final dataset include: Austria, Czech Republic, Denmark, Finland, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden and Switzerland. For Denmark, the NUTS-2 level was introduced in 2007 which coincided with a restructuring of the NUTS-3 levels. We decided to use the 2007 NUTS-2 classification for Denmark and grouped the previous NUTS-3 regions as follows: Hovedstaden (København og Frederiksberg Kommune, Københavns Amt, Frederiksborg Amt and Bornholms Amt), Midtjylland (Ringkøbing Amt, Århus Amt and Vejle Amt), Nordjylland (Nordjyllands Amt, Viborg Amt), Sjælland (Roskilde Amt, Storstrøms Amt and Vestsjællands Amt) and Syddanmark (Fyns Amt, Ribe Amt and Sønderjyllands Amt).

<sup>6</sup> The correlation between both measurements of informal social capital is positive and significant ( $r = 0.145$ ). As both measurements tap into rather different dimensions (i.e., meeting and helping) of the overarching concept of 'informal social capital', this correlation is in line with our expectations. We decided to exclude 684 respondents (less than 3%) due to missing values on one or both variables.

<sup>7</sup> The five-point scale of intergroup contact was constructed as follows: 'no intergroup contact' (both items: 'no, none at all'), 'almost no intergroup contact' (one item: 'no, none at all'; other item: 'yes, a few'), 'little intergroup contact' (both items: 'yes, a few'; or: one item 'no, none at all'; other item 'yes, several'), 'some intergroup contact' (one item 'yes, several'; other item 'yes, a few') and 'a lot of intergroup contact' (both items: 'yes, several'). We are aware of the fact that friends and colleagues can refer to the same person(s). However, in that case, one may assume more intergroup contact possibilities, which finds expression in a higher score on our scale. Moreover, we are aware of the fact that both types of contact might have a different influence on our dependent variables. For reasons of complexity of our model, we decided to construct one scale of intergroup contact.

### 3.4. Ethnic diversity at the contextual level

We calculated two commonly used measures of ethnic diversity (see Hooghe et al., 2009), both at the country level and regional level, which are derived from two theoretical traditions. We used figures derived from the census 2001 provided by Eurostat (2010a), which contained information on the number of natives and non-natives at the NUTS-3 level and the country level. We aggregated these figures to the NUTS-2 level in order to be able to construct our regional ethnic diversity measures.

Our first measure of ethnic diversity is often labelled as 'migrant stock' and is frequently used in research on intergroup relations and out-group derogation. Recently, this measure has also been applied to explain different dimensions of social capital (e.g., Gesthuizen et al., 2009) Here, non-natives were divided into two groups, based on their citizenship referring to Western and non-Western countries.<sup>8</sup> Our measure of migrant stock refers to the percentage of non-natives with a non-Western citizenship compared to the total population. We calculated the migrant stock at the regional (NUTS-2) and country level.

Our second measure of ethnic diversity is labelled 'ethnic fractionalization' and is based on the complement of the Herfindahl index (HI) (see e.g., Alesina et al., 2003, p. 159). This measure, which has been often used in research on the effects of ethnic diversity on different dimensions of social capital (e.g., Letki, 2008; Laurence, 2011), indicates the probability that two randomly selected individuals from a population belong to different (ethnic) groups.<sup>9</sup> Once again, we calculated this measure at the NUTS-2 level as well as the country level.<sup>10</sup> In line with Gesthuizen et al. (2009) we will use both measures of ethnic diversity.

### 3.5. Control variables at the contextual level

At the contextual level we controlled for the level of unemployment at the country and regional level in 2002. Figures on unemployment rates at the country level were derived from Eurostat (2010b), except for Switzerland (OECD, 2010). For most countries in our dataset, information on the level of unemployment could also be obtained from Eurostat (2010b) at the regional level. For Slovenia, figures on unemployment at the NUTS-2 level were only obtainable from 2005 onwards (Eurostat, 2010b). For Switzerland we used figures obtained from OECD (2010) on the unemployment rates in NUTS-2 regions in 2002. Finally, we used figures on the unemployment rates in the Danish regions from 2007, which are derived from OECD (2010) as well.<sup>11</sup>

### 3.6. Control variables at the individual level

Finally, we included several individual-level determinants, in line with previous research on informal social capital, ethnic threat perceptions and intergroup contact (e.g., Putnam, 2007; Schneider, 2008; Gesthuizen et al., 2009). *Employment*

<sup>8</sup> Eurostat (2010a) provided information (both at the NUTS-3 level and the country level) on the numbers of natives and non-natives in all countries in our sample based on their citizenship and an indication of their country of birth. With regard to the information on citizenship, several (sometimes rather broad) regions were distinguished. The following regions were considered as referring to people with a Western citizenship: EU countries (including survey countries), countries of the European Free Trade Association, North America and Oceania. The other regions were considered as referring to people with a non-Western citizenship: Central and Eastern Europe, European Republics (excluding Baltic) of the former USSR, rest of Europe, Central and South America, Africa, Asia, and an 'other citizenship' group. Next to these groups, we decided to consider people with the citizenship of the particular (survey) country as 'non-Western', if they were born abroad or if their country of birth is unknown. We assume this group to mainly reflect naturalized non-Western immigrants. With regard to the other groups we have to make some additional comments. The group 'other citizenship' might largely consist of people without (known) citizenship (which might often refer to asylum seekers). Moreover, the category 'Central and Eastern Europe' is rather broad. This category contains countries which are in our sample (e.g., Czech Republic and Hungary) but also countries like Albania and Macedonia. Note that natives in the Eastern European countries in our sample will be counted as Western, rather than as non-Western immigrants. Finally, the category 'rest of Europe' unfortunately contains Western and non-Western countries (i.e., Andorra, Cyprus, Malta, San Marino, Turkey and Vatican City State). We decided, however, to consider this group to be non-Western as especially Turkey displays relatively large numbers of emigrants to several EU countries. Although the categorization provided by Eurostat (2010a) shows some shortcomings, our measurement of migrant stock turns out to correlate relatively high at the country level with previously used measures of migrant stock (e.g., Schneider, 2008;  $r = 0.87$ , for 14 countries).

<sup>9</sup> We are aware of the fact that the Herfindahl index (and thus the fractionalization index) is colour blind, i.e., the measure does only consider the relative proportions of the different ethnic groups, without taking the actual ethnic composition into account (see Tolsma et al., 2009; Hagendoorn, 2009). However, as this measure is commonly used in research on the effect of ethnic diversity on (informal) social capital (e.g., Putnam, 2007; Tolsma et al., 2009) and focuses on another dimension of ethnic diversity, which might be interesting for policymakers as well, we decided to use both of them (cf. Gesthuizen et al., 2009).

<sup>10</sup> We distinguished the following nine ('ethnic') groups based on their citizenship: Natives (citizenship of the survey country as well as born in the survey country), Western countries (i.e., EU countries, countries of the European Free Trade Association, North America and Oceania), Africa, Asia, South and Central America, former communist countries (i.e., Central and Eastern Europe and European Republics (excluding Baltic) of the former USSR), other European countries (i.e., 'rest of Europe', mainly referring to Turks), 'other citizenship' (also referring to people with no citizenship, e.g., asylum seekers) and, finally, naturalized immigrants (i.e., people with the citizenship of the survey country who are born abroad or whose country of birth is unknown). We are aware of the fact that this measurement of ethnic fractionalization has some disadvantages as it cannot distinguish mutually exclusive ethnic groups. There might particularly be some overlap between the 'naturalized immigrants' group and some other groups. Moreover, the 'naturalized immigrants' group might differ across countries due to differences in migration policies. Nevertheless, we decided not to exclude this group as it may (at least for some countries) refer to relatively large groups of (naturalized) non-Western immigrants.

<sup>11</sup> As the NUTS-2 classification in Denmark was not introduced before 2007, we decided to use figures on unemployment rates in the five Danish NUTS-2 regions in 2007 (OECD, 2010).

**Table 1**Individual-, regional- and country-level variance (empty models and individual-level models) (15 countries; 126 regions;  $N = 21,796$ ).

	Individual-level variance		Regional-level variance			Country-level variance		
	Model A	Model B	Model A	ICC – A	Model B	Model A	ICC – A	Model B
Perceived ethnic threat	2.243	2.083	0.059	2.40%	0.046	0.152	6.19%	0.159
Intergroup contact	1.030	0.896	0.046	3.89%	0.029	0.107	9.04%	0.101
Informal social capital – Meet	2.167	1.919	0.025	1.03%	0.028	0.234	9.65%	0.269
Informal social capital – Help	3.019	2.925	0.047	1.43%	0.044	0.211	6.44%	0.222

Source: European Social Survey (2002/2003). All estimates significant at  $p < 0.05$  (two-sided test of significance).

Model A: Empty model; Model B: Individual level model. ICC: Intra-class correlation model A at regional and country level.

*situation* was measured, asking respondents about their main activity in the last 7 days. In order to keep our model as parsimonious as possible, we used a condensed version of the EGP-classification (Erikson et al., 1979) to assess the occupational status of those respondents who were in paid employment (see Appendix, Table A1). Next to these categories, we distinguished another five categories for respondents who were not in paid employment. To assess respondents' level of *educational attainment* we used information on the number of years of full-time education.<sup>12</sup> *Marital status* was measured using five categories (see Appendix, Table A1). *Religiosity* was measured, asking respondents how often they attend religious services (apart from special occasions as weddings and funerals). The original measurement using a seven-point scale was condensed, distinguishing four (dummy) categories. A fifth category was included for respondents with a missing value on this item (see Appendix, Table A1). The level of *urbanization* of the respondent's living environment was measured by five categories as judged by the respondent. Moreover, a sixth category was included for those respondents with no information regarding their level of urbanization. Finally, we included straightforward measures of *gender* (with male as reference category) and *age* (including a squared term of age).<sup>13</sup> For all variables, respondents with missing values were excluded list-wisely, unless described differently. This resulted in a final data set containing 21,796 respondents. For descriptive statistics of our individual- and (mean centered) contextual-level variables, see Table A1 (Appendix). Correlations between our contextual-level variables, both at the country and the regional level, are presented in Table A2 (Appendix), while Table A3 (Appendix) shows the mean levels of informal meeting and informal helping for the countries in our analysis.

#### 4. Analyses

In order to test our hypotheses, we employed multilevel random intercept regression analyses (with maximum likelihood estimation), which enabled us to take the hierarchical data structure into account (Snijders and Bosker, 1999). First, we estimated empty models (see Table 1, Model A) which provide insight in the variances at the individual level and both contextual levels. As shown in Table 1, the variances of our dependent variables (informal social capital) are by far the highest at the individual level, which is in line with previous studies (e.g., Gesthuizen et al., 2009). Moreover, the variances at the country level turned out to be higher than the variances at the regional level, which is also reflected in the intra-class correlations on both levels. The same pattern can be noticed with regard to both mediating variables, i.e., perceived ethnic threat and intergroup contact.

As the variances of both mediating variables as well as dependent variables are significant at both contextual levels, and thus justify employing multilevel analysis distinguishing three aggregate levels, next we included all individual-level variables (Table 1, Model B). Finally, we included our contextual-level variables at both levels in order to explain differences across regions and countries and test our hypotheses. However, before we will discuss our results, we would like to point out three methodological issues.

First, attention needs to be drawn to the importance of distinguishing the regional and country level. Table A4 (Appendix) shows that the initial effects of our regional-level predictors on our dependent variables (controlled for all individual-level variables), turned out to be the result of differences in migrant stocks and unemployment rates at the country level (compare models 1b/1c/1d and 2b/2c/2d; Table A4a, Appendix). On the other hand, Table A4b (model 4a/4d) shows that the initial effects of both country-level determinants on intergroup contact, are in fact regional-level effects. Once taking into account the regional level, both country-level effects are no longer significant. In other words, only considering both contextual-level

<sup>12</sup> As the ISCED measure was not available for Austria, we decided to use a linear measurement of educational attainment for all countries. For respondents with a missing value on this variable we used (if available) information on their level of educational attainment based on the categorical ISCED measure (for all countries except Austria). Here, for each country we used the mean years of fulltime education corresponding with the particular level of education (based on the categorical variable). For students who were still studying at the time of survey, the study length at the time of the interview was used. As we will also control for employment situation separately (distinguishing 'students' as a separate category) we are able to control for this group and to prevent our results to become influenced. Respondents with extreme values on the scale of educational attainment (i.e., more than 20 years;  $N = 326$ ) were recoded to a maximum value of 20 years.

<sup>13</sup> In order to calculate the respondent's age, we subtracted the respondent's year of birth from the year the interview was conducted. For 55 respondents the year the interview was conducted was not known. For these respondents, we decided to use the year (either 2002 or 2003) in which most other respondents in their country were interviewed. We subtracted the minimum age (i.e., 15) for all respondents in order to get a meaningful interpretation of the intercept.

determinants at the regional or country level, without taking into account the nesting of regions within countries, would lead to different conclusions.

Second, our theoretical framework (see Fig. 1) is rather complex. Not only both dependent variables can be assumed to be (positively) correlated, but both mediating variables are proposed to be (negatively) related as well (cf. Savelkoul et al., 2010). Ideally, this would call for hierarchical structural equation modelling. However, as such analysis techniques only allow to consider two hierarchical levels and our preliminary analyses have indicated the importance of distinguishing two contextual levels and one individual level, we decided to employ separate multilevel regression analyses. In order to control for the proposed relationship between our mediating variables, we decided to include perceived ethnic threat as predictor for intergroup contact and vice versa.

Third, in order to determine the robustness of our findings, we conducted several sensitivity analyses (available on request). As both measurements of ethnic diversity (i.e., migrant stock and ethnic fractionalization) turned out to be highly correlated both at the regional and the country level ( $r > 0.90$ ; see Table A2, Appendix), we decided not to include them simultaneously in our model to prevent multicollinearity. Results turned out to be substantially similar for both measurements of ethnic diversity. We will come back to this in our results section. Moreover, we tested for outliers and influential cases, which is a risk of a limited number of countries or regions when employing multilevel regression analysis. If one country or region differs strongly on one or more characteristics, the eventual outcomes of the analyses might be influenced. Here, Vienna (and also the Swiss NUTS-2 regions) displayed relatively high levels of ethnic diversity (both in terms of migrant stock as well as ethnic fractionalization), which are more than twice as high as the average of all regions. We decided to exclude Vienna since only this region turned out to be influential (only) for the estimation of the effect of ethnic diversity (at the regional level) on perceived ethnic threat.<sup>14</sup> This resulted in a final data set containing 21,468 respondents. Finally, we conducted two sensitivity analyses, using different control variables at the country level. Previous research (e.g., Gesthuizen et al., 2009) indicated that other determinants, like wealth (i.e., GDP) and income inequality, also have an influence on (informal) social capital. As these determinants were only available at the country level, we decided to use them only for our sensitivity analyses. Here, we included them separately instead of unemployment rate (results available on request).<sup>15</sup> The effect of migrant stock on our dependent as well as mediating variables remained substantially similar.<sup>16</sup> We will come back to this in our results section.

## 5. Results

We will first consider the direct effect of ethnic diversity on both dependent variables. Table 2 (Models 1 and 2) shows the effect of migrant stock (both at the regional and country level) on our dependent variables. We found a direct positive effect of migrant stock at the country level on giving informal help ( $b = 0.053$ ;  $SE = 0.022$ ).<sup>17</sup> However, as this effect is in the opposite direction as predicted from Putnam's constrict theory and we did not find an effect on the other dimension of informal social capital, meeting, we have to reject hypothesis 1a for both dependent variables. Moreover, a direct (negative) effect of migrant stock at the regional level on both dimensions of informal social capital was absent, which lead us to refute hypothesis 1b as well for both dimensions.

Next, we took perceived ethnic threat and intergroup contact into account, employing several multilevel regression analyses successively. After considering both mediating variables as dependent variables in Models 3 and 4, we included them as predictors of our dependent variables in Models 5 and 6. Since we only found a direct effect of migrant stock at the country level on informal helping, strictly speaking, we can only examine mediating mechanisms for this relationship. Nevertheless, a closer examination of the results presented in Table 2 shows a rather interesting picture.

First, we will focus on the 'mediating' role of perceived ethnic threat. Both hypotheses 2c and 2d consider ethnic threat perceptions as a mediating mechanism between ethnic diversity on the one hand and informal social capital on the other hand. However, as one can see in Table 2, migrant stock (both at the regional and country level) has no effect on perceived ethnic threat.<sup>18</sup> Hence, we have to reject hypotheses 2a and 2b. Yet, perceived ethnic threat consecutively turned out to reduce the extent to which people meet socially ( $b = -0.032$ ;  $SE = 0.007$ ), corroborating hypothesis 2d only for this dependent variable. Hypothesis 2c, proposing a positive effect of perceived ethnic threat on informal social capital, has to be refuted for both dependent variables.

<sup>14</sup> We also re-ran our models, excluding other regions with relative high levels of migrant stock, however, without influencing the results. Based on these findings, we conclude that only Vienna seems to be an influential case and will therefore be excluded from our analyses. After the exclusion of Vienna, the initial negative effect of migrant stock at the regional level on perceived ethnic threat was no longer significant, whereas all other effects remained substantially similar.

<sup>15</sup> Country-level measures on GDP (at market prices in euro per inhabitant in 2002) were obtained from Eurostat (2010c). To measure income inequality, we used figures on the Gini-index per country, which were only available for all countries in our analysis for 2007 (UNDP, 2007). We assume that this measure can, however, be used as a proxy for the previous years.

<sup>16</sup> Additionally, we excluded our control variable 'urbanization level', which might control for effects on an even lower (e.g., municipality) level. However, our results hardly changed, leading to similar conclusions.

<sup>17</sup> We found similar results if we used our measurements of ethnic fractionalization. If controlling for GDP or income inequality, the country-level effect of ethnic diversity on informal helping became stronger.

<sup>18</sup> Using our measurements of ethnic fractionalization, we found a slightly significant effect of ethnic fractionalization at the regional level on perceived ethnic threat ( $b = -0.738$ ;  $SE = 0.438$ ).



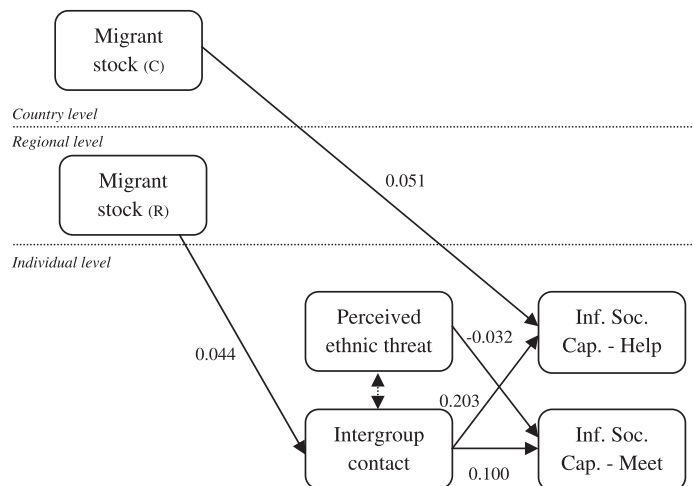
**Table 2**Results three-level analyses informal social capital, perceived ethnic threat and intergroup contact (contextual-level determinants) (15 countries; 125 NUTS-2 regions;  $N = 21,468$ ).

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>		<i>Model 4</i>		<i>Model 5</i>		<i>Model 6</i>	
	Informal social capital – Meet		Informal social capital – Help		Perceived ethnic threat		Intergroup contact		Informal social capital – Meet		Informal social capital – Help	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
<i>Intercept</i>	4.899	0.137**	1.770	0.107**	6.463	0.121**	1.546	0.061**	5.005	0.140**	1.549	0.119**
<i>Regional-level variables</i>												
Migrant stock	–0.000	0.008	0.007	0.010	–0.012	0.010	0.044	0.005**	–0.005	0.008	–0.002	0.010
Unemployment rate	0.001	0.006	–0.004	0.008	0.000	0.007	–0.014	0.004**	0.002	0.006	–0.001	0.008
<i>Country-level variables</i>												
Migrant stock	0.001	0.035	0.053	0.022**	–0.004	0.030	0.006	0.010	0.000	0.034	0.051	0.022**
Unemployment rate	–0.058	0.033*	–0.046	0.020**	–0.021	0.028	–0.020	0.009**	–0.057	0.032*	–0.043	0.020**
<i>Mediating variables</i>												
Perceived ethnic threat							–0.094	0.004**	–0.032	0.007**	0.004	0.008
Intergroup contact					–0.219	0.010**			0.100	0.010**	0.203	0.012**
–2 log likelihood	75,121.539		84,143.558		76,300.816		58,044.681		74,984.021		83,875.157	
Individual-level variance	1.920	0.019**	2.926	0.028**	2.028	0.020**	0.869	0.008**	1.909	0.018**	2.890	0.028**
Regional-level variance	0.028	0.007**	0.044	0.010**	0.038	0.008**	0.009	0.002**	0.026	0.007**	0.043	0.010**
Country-level variance	0.206	0.078**	0.057	0.025**	0.137	0.053**	0.011	0.005**	0.192	0.072**	0.057	0.025**

Source: European Social Survey (2002/2003), Eurostat (2010a/b), OECD (2010). \*\*Significant at  $p < 0.05$ ; \*significant at  $p < 0.10$  (two-sided test of significance).

Empty cells: parameters not estimated due to model specifications. Controlled for individual-level variables (education, employment status, religiosity, marital status, gender, age, age squared and urbanization).

The results of the control variables are presented separately in Table A5 (Appendix).



**Fig. 2.** Overview results separate multilevel regression analyses. *Note:* Estimates are based on separate multilevel regression analyses, using perceived ethnic threat, intergroup contact, respectively both dimensions of informal social capital as dependent variable (non significant estimates not presented). Estimates are controlled for unemployment rate at the regional and country-level and for individual-level variables (education, employment status, religiosity, marital status, gender, age, age squared and urbanization), which are not shown. Perceived ethnic threat and intergroup contact are negatively related.

Next, we considered the ‘mediating’ role of intergroup contact between ethnic diversity and informal social capital. Intergroup contact and perceived ethnic threat turned out to be negatively related as we expected (given the negative effect of perceived ethnic threat on intergroup contact and vice versa). With regard to the expected positive effect of migrant stock on intergroup contact, we only found support at the regional level ( $b = 0.044$ ;  $SE = 0.005$ ), corroborating hypothesis 3b. At the country level, we found no positive effect of migrant stock on intergroup contact, which refutes hypothesis 3a. Our results point out that intergroup contact is positively related to both dimensions of informal social capital ( $b = 0.100$ ;  $SE = 0.010$  for informal meeting;  $b = 0.203$ ;  $SE = 0.012$  for informal helping), supporting hypothesis 3c for both dependent variables.<sup>19</sup>

Although we did not find clear support for the mediating effect of intergroup contact and perceived ethnic threat between migrant stock and informal social capital, our results indicate that both ‘mediating’ variables do influence informal social capital. Finally, we will briefly discuss the effects of our individual-level control variables (Table A5; Appendix). Our findings turned out to be largely in line with previous studies regarding the individual-level determinants of perceived ethnic threat and intergroup contact (e.g., Schneider, 2008; Schlueter and Scheepers, 2010; Savelkoul et al., 2010). People with a lower socio-economic status (in terms of education and employment status) display higher levels of perceived ethnic threat, while males and higher educated people show higher levels of intergroup contact. Moreover, individual-level determinants of informal helping are substantially similar to previous findings (e.g., Wilson and Musick, 1997), as females, higher educated people as well people attending church more frequently, turned out to provide informal help more often. For a general overview of our findings, see Fig. 2.

## 6. Conclusions and discussion

In this study we focused on the relationship between ethnic diversity and informal social capital. Interest in the relationship between ethnic diversity and social capital more in general has been increased since Putnam (2007) proposed that ethnic diversity would foster people to withdraw from social life and consequently would decrease social capital. In our present study we focused on informal social capital which is of particular interest as it refers to rather strong, mainly self-selected ties in the intimate domain and therefore reflects a strict test of Putnam’s claim.

Unlike previous studies we considered three levels: individuals nested within regions, which in turn are nested within countries. Although the share of variance at the regional level was rather low for our dependent variables, our results revealed that it is necessary to distinguish this level in order to accurately disentangle the ‘mediating mechanism’ of

<sup>19</sup> Note that if we use our measurement of ethnic fractionalization, the results in Model 4, 5 and 6 remain substantially similar. Additionally, we re-ran our models using two separate measurements of intergroup: contact with friends and contact with colleagues (results available on request). Previous research (Savelkoul et al., 2010) has shown that both types of contact are differently influenced by contextual- and individual-level determinants, while simultaneously showing differential effects on out-group derogation. Our results showed that intergroup contact with friends is more strongly negatively related to perceived threat than intergroup contact with colleagues (in line with Savelkoul et al., 2010), while our control variable unemployment rate at the country level only affects intergroup contact with colleagues. Interestingly, both types of contact still have a positive effect on giving informal help, while only intergroup contact with friends turned out to be positively related with our other dependent variable, informal meeting. For reasons of complexity of our model, we decided to use the contact scale instead of both separate measurements of intergroup contact. Depending on the availability of relevant data, future research could disentangle these mechanisms more profoundly, using more reliable measurements of both, and maybe more types of intergroup contact.

intergroup contact. Addressing our first research question regarding the direct effect of ethnic diversity on informal social capital, we found no support for Putnam's constrict theory proposing a *negative* effect of ethnic diversity on this type of social capital. We found a direct *positive* effect of ethnic diversity at the country level (both migrant stock and ethnic fractionalization) on informal helping (which became even stronger when we controlled for GDP or income inequality instead of unemployment rate on the country level). Note that this positive effect of migrant stock is in line with Gesthuizen et al.'s (2009) findings, who included both measurements of ethnic diversity simultaneously in their analyses, but used the Eurobarometer instead of the European Social Survey. At the regional level we did not find a direct effect of ethnic diversity on informal social capital, which is explicable given the rather low intra-class correlations of our dependent variables at this level. At this point, the picture seems to be more positive than was expected from Putnam's proposition, at least for Europe.

In this study, however, our aim was to go a step further, by focusing on underlying mechanisms to explain the relationship between ethnic diversity and informal social capital. Based on conflict theory (Blalock, 1967; Scheepers et al., 2002) and contact theory (Allport, 1954; Pettigrew and Tropp, 2006), we used perceptions of ethnic threat and intergroup contact to explain this relationship. Addressing our second research question, we found no support for a *mediating* effect of intergroup contact or perceived ethnic threat between on the one hand ethnic diversity and, on the other hand, informal social capital. We only found a direct effect of ethnic diversity at the country level on giving informal help, yet no indirect effect at this level via the mediating variables. However, taking a closer look at the indirect effects of ethnic diversity at the regional level, the picture appeared to be more complex. Our results showed a direct positive effect of ethnic diversity on intergroup contact that in turn was positively related to both informal social meeting and helping. In other words, there is an *indirect* effect of ethnic diversity at the regional level on informal social capital, via intergroup contact.

Focusing on the indirect effects of ethnic diversity on informal social capital via perceived ethnic threat and intergroup contact, our findings turned out to only partly corroborate our expectations. We did not find a (positive) effect of ethnic diversity, at the country level nor the regional level, on perceived ethnic threat. As this could be the result of a (positive) curvilinear effect between ethnic diversity and perceived ethnic threat (see Schneider, 2008; Savelkoul et al., 2010), we additionally included a squared term of our ethnic diversity measures, however, without finding support for this assumption. Another possible explanation for this contradictory finding might be a discrepancy between the actual and the perceived level of ethnic diversity. Schlueter and Scheepers (2010) recently showed that the *perceived* out-group size, rather than the actual out-group size, has a positive effect on ethnic threat perceptions. This points also to other (mainly country-level) factors, like media coverage on ethnic minorities and political circumstances, which might influence perceptions of ethnic threat, for instance via perceptions of out-group size.

Nevertheless, our results showed that perceptions of ethnic threat play a role in explaining informal social capital, since they reduced informal social meeting. Although we did not, contradictory to previous research (e.g., Schlueter and Wagner, 2008), find a positive effect of ethnic diversity on perceived ethnic threat, the negative effect of ethnic threat perceptions on informal meeting might shed light on the underlying mechanisms of Putnam's (2007) constrict theory. As perceived ethnic threat turned out only to reduce informal social meeting, this mechanism is, however, less general than proposed by constrict theory. We assume that our finding that only informal meeting turned out to be affected by perceptions of ethnic threat might be explained by the fact that informal helping reflects stronger ties than informal meeting, as the first presupposes the latter. This assumption is supported by Table A3 (Appendix), showing that the mean level of informal meeting exceeds the level of informal helping in all countries.

Moreover, our results revealed a positive effect of ethnic diversity at the regional level on intergroup contact, which we did not find at the country level. We assume that this is rather understandable as proximity might play an important role in this respect: the likelihood of intergroup contact will be only increased if ethnic minority members are present in people's direct environment. In other words, a large number of ethnic minority members in a country will hardly influence people's possibility to come into contact with these ethnic minorities, if they are concentrated in different regions in the country. Intergroup contact, consequently, turned out to be positively related to both dimensions of informal social capital. We proposed that this positive relationship could be explained by extroversion or sociability (Wilson, 2000): people who are more extrovert and display a higher level of sociability will get in touch with other people more easily, including ethnic minorities, which increases social networks and levels of informal meeting and helping. We are aware, however, of the fact that this line of reasoning points toward an underlying 'mechanism', or spurious effect (i.e., being extrovert or sociable), rather than a causal relationship. Such a causal relationship between intergroup contact and informal social capital is, however, also conceivable in terms of spill-over effects: people who display high levels of intergroup contact might, as a result, also have high levels of informal social capital, as their social networks might partly be extended via their intergroup contacts. Previous research revealed such spill-over effects for formal social capital, i.e., for religious and secular volunteering (Jackson et al., 1995; Ruiter and De Graaf, 2006). In this case, it is, however, also likely that the causal relationship runs in the opposite direction. Research using longitudinal data is warranted to disentangle the underlying mechanisms more profoundly. Using panel data would, moreover, enable a more strict test of Putnam's proposition in general, as one could address to what extent informal social ties disintegrate with increasing ethnic diversity over time.

A different, but also important alley for future research, is the use of more specific, ethnicity-related indicators of (informal) social capital. Previous research on the relationship between ethnic diversity and (in)formal social capital has mainly used general measures, not referring to the ethnic majority or minority groups (e.g., Letki, 2008; Gesthuizen et al., 2009). This distinction might be interesting when it comes to the underlying mechanisms of perceived ethnic threat and, in particular, intergroup contact. Although both determinants are (as we have shown) also important to explain informal social capital in

general, other mechanisms might play a role as well with regard to informal social ties with the ethnic majority in-group. Pettigrew (1998, p. 72) mentioned in this respect a deprovincialization mechanism: intergroup contact is supposed to reshape people's view of their own (ethnic) group as in-group customs and norms turn out to be not the only alternative to cope with the social world. He argued that, "part of this process involves having less contact with the ingroup as a result of more contact with the outgroup" (Pettigrew, 1998, p. 73). Although we assume that, given our selection of only natives and based on the 'homophily principle' (McPherson et al., 2001), our measurements of informal social capital will (mainly) refer to connections with the ethnic in-group, the available data do not allow us to actually make this distinction. More fine-grained measures of (in)formal social capital, taking into account ethnicity, should be included in (cross-national) surveys to disentangle the effects of ethnic diversity more profoundly.

Finally, our results do not only indicate the complexity of the mechanisms determining informal social capital, they also emphasize the importance of taking into account different aggregate levels. As our results point out, different mechanisms can be found at different contextual levels. Unfortunately, due to data limitations, we were not able to take even lower contextual levels into account as well. Although, at the country level, our results contradict Putnam's findings and present a more encouraging picture, it might be the case that different mechanisms play a role at the municipality or even the neighbourhood level, supporting Putnam's constrict theory. Evidence from previous studies focusing on the relationship between ethnic diversity at the municipality and/or neighbourhood level on different dimensions of social capital in general is, however, rather mixed (see e.g., Letki, 2008; Laurence, 2011; Tolsma et al., 2009). As data limitations will probably restrict possibilities to conduct cross-national research at municipality or even neighbourhood-levels, future research can build on our study by testing hypotheses on the mediating role of perceived ethnic threat and intergroup contact in municipalities and neighbourhoods *within* single countries.

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## Appendix A

See Tables A1–A5.

**Table A1**

Descriptive statistics individual level and contextual-level variables (15 countries; 126 regions;  $N = 21,796$ ).

Variable	Range	Mean/percentage	S.D.
<i>Individual level</i>			
Dependent variables			
Informal social capital – Meet	0–6	4.04	1.55
Informal social capital – Help	0–6	2.64	1.80
Mediating variables			
Perceived ethnic threat	0–10	5.38	1.56
Intergroup contact	0–4	0.94	1.09
<i>Control variables individual level</i>			
Age ( $15 = 0$ )	0–88	31.30	17.78
Age squared	0–7744	1295.79	1222.56
Educational attainment (years)	0–20	11.76	3.89
Religiosity			
Church attendance never (Ref.)	0/1	29.61%	
Church attendance rarely	0/1	40.71%	
Church attendance once a month	0/1	10.19%	
Church attendance once a week or more	0/1	19.27%	
Church attendance missing	0/1	0.22%	
Employment status			
Service class (Ref.)	0/1	18.70%	
Routine non manuals	0/1	11.28%	
Self employed	0/1	3.92%	
Manual workers	0/1	16.23%	
Occupational status missing (employed)	0/1	1.54%	
Unemployed	0/1	3.81%	
Student	0/1	8.85%	
Housekeeping	0/1	11.56%	
Retired	0/1	19.43%	
Other employment situation	0/1	4.68%	

**Table A1** (continued)

Variable	Range	Mean/percentage	S.D.
<b>Marital status</b>			
Not married/never been married (Ref.)	0/1	28.97%	
Married	0/1	54.98%	
Divorced/living separated	0/1	7.63%	
Widowed	0/1	8.15%	
Missing marital status	0/1	0.27%	
<b>Urbanization</b>			
Big city	0/1	14.94%	
Suburbs or outskirts of big city	0/1	14.14%	
Town or small city (Ref.)	0/1	29.12%	
Country village	0/1	32.14%	
Farm or home in the countryside	0/1	9.44%	
Missing urbanization	0/1	0.22%	
<b>Gender</b>			
Male (Ref.)	0/1	48.51%	
Female	0/1	51.49%	
<b>Regional level</b>			
Migrant stock (centered)	−5.01–17.71	0.00	4.40
Ethnic fractionalization (centered)	−0.11–0.44	0.00	0.11
Unemployment rate (centered)	−6.20–18.10	0.00	6.37
<b>Country level</b>			
Migrant stock (centered)	−4.66–11.16	0.00	4.17
Ethnic fractionalization (centered)	−0.11–0.32	0.00	0.11
Unemployment rate (centered)	−3.97–13.13	0.00	4.39

Source: European Social Survey (2002/2003), Eurostat (2010a/b), OECD (2010).

**Table A2**

Pearson correlations between contextual-level variables.

	Country level (N = 15)			Regional level (N = 126)		
	Migrant stock	Ethnic fractionalization	Unemployment rate	Migrant stock	Ethnic fractionalization	Unemployment rate
Migrant stock	1.000			1.000		
Ethnic fractionalization	0.974*	1.000		0.968*	1.000	
Unemployment rate	−0.514**	−0.516**	1.000	−0.367*	−0.396*	1.000

Sources: Eurostat (2010a/b), OECD (2010).

\* Significant at  $p < 0.01$  (2-tailed).

\*\* Significant at  $p < 0.05$  (2-tailed).

**Table A3**

Mean levels informal meeting and helping.

Country	Mean level informal meeting	Mean level informal helping
Austria	4.02	3.40
Czech Republic	3.43	1.90
Denmark	4.39	2.82
Finland	4.16	2.21
Hungary	2.88	2.61
Ireland	4.06	2.52
Italy	3.85	2.15
The Netherlands	4.29	3.18
Norway	4.78	2.61
Poland	3.37	2.19
Portugal	4.56	2.44
Slovenia	3.60	3.10
Spain	4.27	1.98
Sweden	4.31	2.74
Switzerland	4.20	3.34

Source: European Social Survey (2002/2003).

**Table A4a**

Results two-level and three-level analyses: Informal social capital (15 countries; 126 regions; N = 21,796).

	Informal social capital – Meet								Informal social capital – Help							
	Model 1a (2-level C.) <sup>a</sup>		Model 1b (2-level R.) <sup>b</sup>		Model 1c (3-level) <sup>c</sup>		Model 1d (3-level) <sup>c</sup>		Model 2a (2-level C.) <sup>a</sup>		Model 2b (2-level R.) <sup>b</sup>		Model 2c (3-level) <sup>c</sup>		Model 2d (3-level) <sup>c</sup>	
<i>Intercept</i>	4.867	0.136**	4.888	0.081**	4.893	0.150**	4.898	0.137**	1.771	0.107**	1.687	0.090**	1.754	0.133**	1.769	0.107**
<i>Regional level</i>																
Migrant stock			0.006	0.011	0.003	0.007	0.002	0.007			0.050	0.009**	0.021	0.009**	0.013	0.009
Unempl. rate			-0.041	0.008**	-0.001	0.006	0.001	0.006			-0.042	0.007**	-0.009	0.007	-0.003	0.008
<i>Country level</i>																
Migrant stock	0.003	0.034					0.000	0.035	0.065	0.020**					0.048	0.022**
Unempl. rate	-0.055	0.033*					-0.059	0.033*	-0.046	0.019**					-0.048	0.020**

Source: European Social Survey (2002/2003), Eurostat (2010a/b), OECD (2010). \*\*Significant at  $p < 0.05$ ; \*significant at  $p < 0.10$  (two-sided test of significance).

Empty cells: parameters not estimated due to model specifications. Controlled for all individual level background characteristics (education, employment status, religiosity, marital status, gender, age, age squared and urbanization). Not controlled for perceived ethnic threat and intergroup contact.

<sup>a</sup> Two-level models: Country level and individual level.<sup>b</sup> Two-level models: Regional level and individual level.<sup>c</sup> Three-level models: Country level, regional level and individual level.

**Table A4b**

Results two-level and three-level analyses: Perceived ethnic threat and intergroup contact (15 countries; 126 regions; N = 21,796).

	Perceived ethnic threat								Intergroup contact							
	Model 3a (2-level C.) <sup>a</sup>		Model 3b (2-level R.) <sup>b</sup>		Model 3c (3-level) <sup>c</sup>		Model 3d (3-level) <sup>c</sup>		Model 4a (2-level C.) <sup>a</sup>		Model 4b (2-level R.) <sup>b</sup>		Model 4c (3-level) <sup>c</sup>		Model 4d (3-level) <sup>c</sup>	
<i>Intercept</i>	6.242	0.123**	6.195	0.081**	6.247	0.126**	6.249	0.125**	0.981	0.059**	0.945	0.049**	0.950	0.062**	0.957	0.058**
<i>Regional level</i>																
Migrant stock			−0.021	0.010**	−0.026	0.008**	−0.026	0.008**			0.048	0.004**	0.044	0.004**	0.041	0.005**
Unempl. rate			−0.005	0.007	0.001	0.007	0.002	0.007			−0.029	0.003**	−0.019	0.004**	−0.016	0.004**
<i>Country level</i>																
Migrant stock	−0.027	0.029					−0.002	0.031	0.054	0.011**					0.011	0.011
Unempl. rate	−0.015	0.028					−0.016	0.029	−0.030	0.010**					−0.017	0.011

Source: European Social Survey (2002/2003), Eurostat (2010a/b), OECD (2010). \*\*Significant at  $p < 0.05$ ; \*significant at  $p < 0.10$  (two-sided test of significance).

Empty cells: parameters not estimated due to model specifications. Controlled for all individual level background characteristics (education, employment status, religiosity, marital status, gender, age, age squared and urbanization). Not controlled for perceived ethnic threat or intergroup contact.

<sup>a</sup> Two-level models: Country level and individual level.

<sup>b</sup> Two-level models: Regional level and individual level.

<sup>c</sup> Three-level models: Country level, regional level and individual level.

**Table A5**

Results three-level analyses informal social capital, perceived ethnic threat and intergroup contact (individual level determinants) (15 countries; 125 NUTS-2 regions; N = 21,468).

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>		<i>Model 4</i>		<i>Model 5</i>		<i>Model 6</i>	
	Informal social capital – Meet		Informal social capital – Help		Perceived ethnic threat		Intergroup contact		Informal social capital – Meet		Informal social capital – Help	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
<i>Intercept</i>	4.899	0.137**	1.770	0.107**	6.463	0.121**	1.546	0.061**	5.005	0.140**	1.549	0.119**
<i>Education</i>	0.012	0.003**	0.021	0.004**	−0.075	0.003**	0.022	0.002**	0.006	0.003**	0.015	0.004**
<i>Employment status</i>												
Service class (Ref.)												
Routine non manuals	−0.080	0.037**	−0.008	0.046	0.182	0.038**	−0.136	0.025**	−0.058	0.037	0.023	0.046
Self employed	−0.039	0.055	0.039	0.067	0.239	0.056**	−0.312	0.037**	0.005	0.055	0.107	0.067
Manual workers	−0.095	0.035**	0.008	0.043	0.332	0.036**	−0.083	0.023**	−0.072	0.035**	0.030	0.043
Unemployed	−0.036	0.055	−0.022	0.068	0.353	0.057**	−0.336	0.037**	0.016	0.055	0.053	0.068
Student	0.315	0.049**	0.207	0.060**	−0.213	0.050**	−0.182	0.033**	0.325	0.049**	0.242	0.060**
Retired	0.018	0.042	−0.022	0.052	0.248	0.043**	−0.445	0.028**	0.077	0.042*	0.074	0.052
Housekeeping	0.019	0.040	0.063	0.049	0.256	0.041**	−0.420	0.027**	0.075	0.040*	0.154	0.049**
Other employment situation	−0.059	0.051	−0.051	0.063	0.269	0.052**	−0.295	0.034**	−0.015	0.051	0.014	0.063
Occupational status missing (employed)	0.119	0.080	−0.085	0.099	0.104	0.083	−0.257	0.054**	0.151	0.080*	−0.030	0.099
<i>Religiosity</i>												
Ch. attend. never (Ref.)												
Ch. attend. rarely	0.041	0.024*	0.200	0.029**	−0.058	0.024**	−0.021	0.016	0.041	0.024*	0.204	0.029**
Ch. attend. once a month	0.091	0.036**	0.504	0.044**	−0.135	0.037**	−0.023	0.024	0.088	0.036**	0.507	0.044**
Ch. attend. once a week or more	0.088	0.032**	0.577	0.040**	−0.063	0.033*	−0.066	0.022**	0.092	0.032**	0.589	0.040**
Ch. attend. missing	−0.263	0.202	−0.198	0.249	0.377	0.207*	0.241	0.136*	−0.274	0.201	−0.242	0.247
<i>Marital status</i>												
Unmarried (Ref.)												
Married	−0.293	0.029**	−0.079	0.036**	−0.025	0.030	−0.030	0.020	−0.291	0.029**	−0.073	0.036**
Divorced	−0.032	0.044	0.104	0.054*	0.084	0.045*	0.039	0.029	−0.033	0.044	0.097	0.054*
Widowed	−0.017	0.048	−0.071	0.059	0.099	0.050**	−0.026	0.032	−0.010	0.048	−0.064	0.059
Missing marital status	−0.246	0.187	0.347	0.231	−0.010	0.192	0.131	0.126	−0.261	0.187	0.320	0.230
Gender (Male = ref)	−0.067	0.021**	0.085	0.026**	−0.017	0.021	−0.067	0.014**	−0.060	0.021**	0.098	0.026**
Age	−0.040	0.003**	0.033	0.003**	−0.003	0.003	0.001	0.002	−0.040	0.003**	0.032	0.003**
Age squared	0.000	0.000**	−0.001	0.000**	0.000	0.000	0.000	0.000**	0.000	0.000**	−0.001	0.000**
<i>Urbanization</i>												
Town/small city (Ref.)												
Big city	0.032	0.033	0.061	0.040	−0.042	0.034	0.134	0.022**	0.015	0.033	0.033	0.040
Suburbs	−0.022	0.033	−0.007	0.040	0.049	0.034	0.144	0.022**	−0.036	0.032	−0.036	0.040
Country village	0.006	0.025	0.044	0.031	0.084	0.026**	−0.032	0.017*	0.013	0.025	0.052	0.031*
Farm/countryside	−0.111	0.038**	0.106	0.047**	0.115	0.039**	−0.126	0.025**	−0.092	0.038**	0.134	0.047**
Missing urbanization	−0.316	0.201	0.204	0.249	−0.244	0.207	−0.140	0.135	−0.312	0.201	0.229	0.247

Source: European Social Survey (2002/2003), Eurostat (2010a/b), OECD (2010). \*\*Significant at  $p < 0.05$ ; \*significant at  $p < 0.10$  (two-sided test of significance).

Empty cells: parameters not estimated due to model specifications. Migrant stock and unemployment rate (at country and regional level) were also included in all models. In model 3 also intergroup contact was included, whereas in model 4 perceived ethnic threat was included. In models 5 and 6 both intergroup contact and perceived ethnic threat were included as well.



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